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ABSTRACT

This paper describes an application of MOOs (meeting places for role-playing on the Internet) in the Advanced Reading and Language Literacy Program (ARLLP) at the University of California, Berkeley, and considers how the project has changed thinking about technology and its role in teacher education programs. The paper describes an ongoing pilot project, begun in the Spring of 1996, which explores how new Internet-based communication environments like the World Wide Web and MOOs can be used to further the objectives of teacher education programs. The project centers around the creation in cyberspace of "Graceland Elementary School" and an open house where community members can visit rooms created by ARLLP students. These rooms reflect students' ideal literacy classrooms. The paper provides examples of the characters involved, the rooms themselves, and the actual dialogue during the open house. Other issues, including technical requirements and training, are also presented. The project convinced developers that the main focus of instruction in technology should be in terms of the Internet and applications such as MOOs, and that drill and practice software should play only a minor role in instruction. Contains 22 references. (RS)

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ED 416 438

Instructional applications of Internet technology: Teacher training in the Language and Literacy MOO

Richard D. McCallum, Owen G. McGrath, Jeffrey B. Rusch

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The purpose of this paper is twofold. First, we describe an application of MOOs in the Advanced Reading and Language Literacy Program (ARLLP) at the University of California, Berkeley. We describe an ongoing pilot project, begun in the Spring of 1996, in which we are exploring how new Internet-based communication environments like the World Wide Web and MOOs can be used to further the objectives of our teacher education program.

Our project centers around the creation in cyberspace of "Graceland Elementary School" and an open house where community members can visit rooms created by ARLLP students. These rooms reflect students' ideal literacy classrooms. We provide examples of the characters involved, the rooms themselves, and the actual dialogue during the open house. Other issues, including technical requirements and training, also are presented.

Second, beyond simply describing our project, we consider how it has changed our thinking about technology and its role in teacher education programs. How, we ask, has the development and implementation of this activity broadened or clarified our views of the nature and role of educational technology in teacher education programs?

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Introduction

During the past two decades, computers have increasingly found their way into language arts education. The different kinds of software environments deployed over the years reflect not only improving technical capacities but also evolving theories about language and learning. Recently, language arts teachers and researchers have begun exploring the ability to link students and teachers together by networked computers. Among the new electronic forums made possible by networks are text-based virtual worlds called MOOs. MOOs are chatroom-like meeting places for role-playing on the Internet in which students can create (in text and programming routines) representations of real and fictional worlds -- representations that can be supplemented graphically by a link to the World Wide Web. The kinds of interaction and communication accommodated by these environments create new potential for language and literacy education and deserve further investigation.

Instructional software in the language arts: MOOs in perspective

Before explaining the details of the pilot project and the technologies we used, it is useful to provide some context for our understanding of where MOOs and other Internet applications fit in language arts education in general, and in comparison to other types of educational software in particular. Because of the volume and diversity of software environments put into use in language arts classrooms over the past 20 years, general categories for describing them are crucial, elusive, and, as Gail Hawisher suggests, inherently problematic (1994). Nevertheless, the following classification scheme, which we have found to be useful in describing Language Arts applications, groups software environments by function. These categories include: (1) drill-and-practice programs, (2) games, (3) hypertext books, (4) microworlds, and (5) computer-mediated communication.

Drill-and-practice

Drill-and-practice software generally is characterized as providing large amounts of repetitive practice on particular skills, with an emphasis on accuracy, fluency, and speed of performance (Balajthy, 1986; Reinking, 1987). Though interactive and self-paced, the software usually involves a student sitting alone at a computer trying to choose correct

answers from a list of multiple choices. Like the personalized systems of instruction that find their theoretical base in behaviorism and operant conditioning (Farrell, 1991), drill-and-practice educational software has its roots in an educational model that boils down to the following teaching strategy: teach one concept, drill and practice that concept, and test it until performance is mastered (Strickland & Wepner, 1987).

For language arts instruction, drill-and-practice software often resembles electronic versions of worksheets. One pessimistic defender of this category has even argued that, since most students spend so much time completing dittoed worksheets anyway, they might as well do so in the less-boring environment of the computer (Grabe, 1986).

Games

A second and not too distantly related category of language arts software encompasses word games and puzzle programs which, though still focusing on isolated skills, at least offer a measure of entertainment. Intrinsically interesting, game-like computer activities not only can make skill instruction more palatable by increasing student motivation, but also can potentially cultivate some social interaction among students. In contrast to the isolation imposed by drill-and-practice programs, game software like Broderbund's *Carmen Sandiego* series encourages whole- and small-group interaction.

Hypertext books

The useful but limited intertextuality employed in the *Carmen Sandiego* series, in which the students physically look up detailed background information in a reference book in order to make sense of the clues on the screen, anticipates a more recent category of software relevant to language arts: hypertext. In hypertext, words or phrases on the screen can be linked electronically to other text. While reading, a user can choose to click on and follow a link and later return to and continue reading the original passage. In addition, many hypertext systems like Eastgate System's StorySpace allow the user to create new links.

As simple as it sounds, this mechanism provides tremendous potential for making background information, commentary, or cross-references immediately and easily available to readers. From a research perspective, there is a growing body of knowledge about the importance of intertextual linking in the comprehension process (Hartman, 1994). Research on the effects of using hypertext in reading instruction indicates that even beginning child hypertext users are able to navigate hypertext systems and access information easily in a strategic manner (Shen, 1995). Moreover, the advent of this technology has spurred publishers to make available hypertext versions of full-length literature. Some observers, anticipating revolutionary changes that hypertext will bring about in the way we learn and preserve human knowledge, even argue that hypertext eventually will replace the essay as the basic unit of writing instruction (Lanham, 1993).

Microworlds

Seymour Papert coined the term 'microworlds' to describe a new kind of computer-based learning environment in which children do not simply respond to predetermined questions but actually control when and how events will happen (Papert, 1980). For Papert and

others at the MIT Media Lab Epistemology and Learning Group, the theories of cognitive scientists like Piaget imply that, because people learn by actively constructing new knowledge, not by having information poured into their heads, the learning environments we create should allow a human learner to exercise particularly powerful ideas or intellectual skills (Papert, 1980). An example microworld for developing reading skills is Lawler's *Beachworld*, where -- in the process of exploring and playing in the virtual world -- young children learn word associations (Haughlan & Shade, 1990).

Another microworld example that has seen use experimentally in a linguistic minority classroom is *NewsMaker*, developed at MIT by L. Mark Kortekaas. *NewsMaker* is a microworld specifically designed to allow elementary-grade students to produce their own personal newspapers, mixing articles that they have written with articles they have culled from online news services. In the NewsMaker project, two linguistic minority classes among others were introduced to the *NewsMaker* system. Using *NewsMaker*, students at an elementary school in Boston spent time writing, reading, and selecting articles on topics of personal interest ranging from criticism of school tracking systems to an editorial on the joys of vacationing. There is potentially great value in an online environment that acknowledges the importance of individual background knowledge in the meaning-construction process and empowers the reader to make links between personal experience and new sources of information -- a major focus of literacy research in the past 20 years (Anderson, 1994; Hartman, 1994).

Computer-mediated communication

Missing from Papert's influential treatise on microworlds and from the Piagetian theories that inspired it is any in depth discussion of the social interactive aspects of learning that Vygotsky and others consider important (Wood, 1989). Not surprisingly, most microworlds constructed to date present their electronic worlds full of virtual objects only to the individual user. In contrast to this solitude, a fifth and more recent major category of software environments for education -- called computer-mediated communication -- is characterized by social interaction.

During the past decade, the ability to link students by networked computers has opened new opportunities for authentic communication settings. As elementary as the technology may appear, the kinds of text-based conversations made possible by e-mail, electronic bulletin boards, and real-time conferencing programs are seen by some as emerging collaborative technologies that make palpable the idea that knowledge is socially constructed (Bruce, Peyton, & Batson, 1993). These new forms of conversations also are seen by others as having even as profound an effect on reading and writing education as did the rise of affordable published readers in the early part of the 1900s (Balester, Halasek, & Peterson, 1992).

At the very least, online discussion environments such as the Daedalus Group's *DIWE InterChange* might be seen to change the way students participate in classroom discussions. Environments like *InterChange* facilitate synchronous (i.e., real-time) discussions for whole classes, small groups, or both simultaneously. Students compose private messages and send them to all the members of a discussion group for immediate viewing. Transcripts of these discussions are recorded, and can be printed and reviewed at any time.

When a class holds a discussion in a program like *Daedalus InterChange*, opportunities for thoughtful participation and exchange seem to increase (Bruce, Peyton, & Batson, 1993). In particular, students can take time to compose their remarks, are not locked into turn-taking, and perhaps feel less inhibited than in a traditional classroom discussion.

MOO/MUD/Web-MOO: Best of all possible (electronic) worlds?

Recently, teachers and researchers have begun exploring a new brand of online learning environments called MOOs that combine many features of the major software categories described earlier. In particular, Web-MOOs (the newest member of the MOO family) bring together gaming, microworlds, hypertext, and computer-mediated communication. In addition, these new environments accommodate informal interaction, drawing/graphics, role-playing, and a fascinating opportunity to blend language arts and computer programming education (Bruckman, 1994).

MOOs and literacy development

Implicit in the software categories discussed in the first paragraph of the instructional software section discussed previously are a set of principles or beliefs regarding language and literacy learning that we hold, and that are the guiding principles of the ARLLP at Berkeley. What is interesting, is that the kind of activities afforded by new environments such as MOOs are consistent with and build upon our basic beliefs about literacy development.

First, as discussed earlier, environments such as MOOs invite a style of discourse that we find to be very compatible with our belief that language and literacy develops in social contexts. Language and literacy, we argue, are best viewed as social practices that reflect the values and beliefs of the communities that use them (Ruddell & Unrau, 1994). Furthermore, it is with the help and assistance of others within linguistic interaction that one learns the nuances of language and literacy practices. In our view, it is in the affordance of this type of social interaction that MOOs hold so much promise. The real-time interactional component of MOOs provides an opportunity for strengthening and extending language use, and the suffusion of textuality in both the description of the virtual world and the transcript of the dialogue show the constitutive and dialogic nature of language.

Second, it is our belief that language learning flourishes in interactive processes that permit a range of student engagement at many levels. The scope of opportunities for sanctioned participation in MOO activities extends from delivering a soliloquy at center stage to loitering quietly as a spectator. Yet even the most reticent participant becomes engaged in language use, because at the very least the description and dialogue include each character's presence and movements for all to see. New users often find themselves agreeably drawn into a more active involvement as they contribute to the dialogue or perform actions (a MOO feature known as 'emoting'). Involvement in a MOO is indeed far from the solitary nature of completing a workbook page, or a skill and drill software application.

Third, we believe that it is hard to overstate the importance of affective motivation in

language and literacy learning. That is, the best kind of learning often occurs when students discover the pleasure of meaningful personal response through diversion and performance. Unfortunately, designers of computer learning environments traditionally have given little attention to the value of play as a mediator for learning (Rieber, 1996). Environments such as MOOs provide for such motivation in that they can involve imaginative creation, social interaction, and may link directly to topical discussions that are important to students, depending on the nature of the application. It also helps that MOO activities almost always entail spontaneous antics and colorful displays of wit. They are, in short, very enjoyable activities.

Fourth, and closely related to the first three issues, is our belief that language and literacy skills develop best when students are engaged in functional and meaningful activities. A weakness of skill and drill programs and other direct instructional approaches is that students may not see the direct linkages to themselves as learners -- that is, they may not see the usefulness of the activities or see how the skills can be applied directly to their day-to-day lives. Environments such as MOOs provide a context in which instructors can develop activities that are both functional and meaningful to students. In such a case, student motivation will increase as will their active engagement in the activity.

Fifth, we view language and literacy learning as a development process rather than as set of skills to be acquired. That is, learners' knowledge and understanding of language and literacy increases over time as they engage in literate activities, with individual developmental patterns varying significantly among learners. Environments such as MOOs, we feel, accommodate this variation nicely, in that learners at different developmental levels can still be engaged in the activities, participating at different levels of mastery. The fact that a range of learners can be engaged in the same activity builds upon the strengths of the social domain (assistance can be supplied) and builds motivation and active engagement.

Sixth, and last, is our belief that the development of language and literacy skills comes about through successive exposure and meaningful practice. That is, to develop literacy skills, students need many opportunities to use these skills in meaningful and functional social settings. It is only by reading and writing that we become better readers and writers. Environments such as MOOs provide for this because they allow for open-ended activities in which students may engage again and again. It is only over time, and with practice, that language and literacy skills will develop.

Language and Literacy MOO year one: Getting started

A MOO for English 1A

Our project was inspired by our observation of an earlier MOO pilot project in a U.C. Berkeley English 1A class during fall semester 1995, which allowed us to see first-hand some of the kinds of interactions virtual discussion environments such as MOOs allow. The course we observed consisted of 32 freshmen enrolled in a required English 1A class. The course was taught by an experienced graduate student instructor from the English department. During the last five weeks of the semester, the students read, studied, and wrote two essays about William Gibson's *Neuromancer*. During five class meetings held in a computer lab, the students met and discussed Gibson's novel in a MOO called

ChibaMOO.

During the course of the semester, the instructor used the MOO in several ways to achieve the overall objectives of the course. First, she attempted to foster written communication by organizing reading response groups in the MOO -- not only because the activities tended to address the questions that the students raised, but also because of the benefits they offered in allowing students to see how others (including the teacher) react to the text and approach difficult reading obstacles.

Second, the instructor used the MOO to gain a better sense of the students' overall background knowledge and comprehension. She used the transcripts generated during the MOO sessions both to gain a sense of their understanding and as an instruction tool. After each session she had the students examine their transcripts (as well as others) to examine their views in light of other readers' interpretations.

It also was very evident both within the class and speaking to students afterward that the MOO activity was characterized by high levels of student engagement and interest. Anecdotal evidence suggested that participation in the English 1A MOO facilitated student comprehension of the novel.

L&L MOO is born

Intrigued by the insights gained from observing the MOO in English 1A and armed with a "let's try it" attitude, we started with several key ground rules for our own MOO experiment, the L&L MOO. First, we agreed that the specifics of the technology should be in the background while we maintained a focus on our instructional objectives. We did not want to fall into the trap of not clearly distinguishing issues in technology from educational objectives. Second, we wanted to capitalize on what we viewed initially as the strengths of the MOO environments: computer-mediated communication and role-playing. Any activity we developed should, by definition, build upon these strengths. Third, we wanted to ensure that any activity we developed would be consistent with the objectives of the teacher training program. That is, any activity we developed should be consistent with other components of the program and be working to achieve the same goals.

With these principles in mind, we created a virtual school in cyberspace: GracelandElementary School located in fictional Burbesto, California. Rather than being designed around a specific piece of literature (as in English 1A) Graceland was designed to be a venue for role-play -- a place for our student teachers to explore the interaction among parents, community leaders, teachers, and staff. In creating Graceland, we wanted to use the simulation and role-playing environment within the MOO as a vehicle for synthesis of program coursework. In particular, the virtual classroom of the MOO would allow us to place student teachers in a position where they would have to exercise the critical thinking and judgment necessary when working in real schools with parents, administrators, and other interested parties. The MOO role-playing activities would require the student teachers to make explicit decisions about literacy instruction and to defend those decisions to faculty and their fellow students.

Decision making is, in fact, a central theme that runs throughout ARLLP as a component of both the theory and practice strands of the coursework. The existing requirements and

experiences in the program were designed to engage student teachers in decision-making issues, such as the development and implementation of lesson plans, design of intervention programs, and selection of assessment instruments.

An obvious starting place for our Graceland MOO experiment was to extend a familiar activity in which the student teachers already had been involved during the previous semesters: development of an ideal language arts classroom. The development of an ideal literacy learning environment transfers nicely to online environments like MOOs -- which utilize an architectural metaphor -- combined with the multimedia capacity of the World Wide Web. The architecture metaphor (i.e. the space) gave the assignment structure, and the open-house dimension, as implemented in the real-time chat component of the MOO, gave the assignment meaning and saliency.

To bring Graceland Elementary to life, ARLLP students volunteered for one of two roles: host or guest. At center stage in the simulation would be the hosts. Hosts were required to: (1) develop a persona, complete with a name, physical description, and brief philosophy statement; and (2) to design and describe their perfect classroom -- complete with a floor plan, a description of the characters within the room (both speaking and non-speaking), a description of any artifacts in the room (on the walls, bookshelves, and furniture), and develop what we termed a 'site of instruction.' This instructional site was to capture the essence of the type of instruction that each teacher (i.e. host) might advocate for his or her student population. We then combined the hosts' classrooms under one virtual roof (dubbed Graceland Elementary School) and planned our open house under the theme of "Early Intervention in Literacy Education."

The burden on the hosts to create a virtual classroom would not be unbearable, we believed, because they were able to draw from a variety of previous assignments and papers that they had completed in other courses. In previous classes, for example, these student teachers already had recorded and analyzed audiotapes of student interactional patterns in classrooms and videotaped their own instruction for analysis and critique. In their course papers, they were analyzing and discussing various instructional and theoretical approaches to literacy instruction. Hosts were not constrained to using only these existing materials. In essence, the assignment gave them latitude -- hosts could include any type of information that they deemed important for the clarification of the decisions that they made regarding instruction in their virtual classrooms.

"Intervention Heaven" was one of the first rooms designed for the L&L MOO. The host for this room used both graphics (still photos and a computer-generated map) and text to describe the nature of the environment and activities that might occur within that classroom. In this case, the text carried the bulk of the information about the room while the graphics provided some dimension and particularity.

Whereas the hosts were put in a position of having to describe and defend their decisions, guests were required to: (1) develop a persona, complete with a name, physical description, and brief philosophy statement; and (2) visit all of the rooms in Graceland and generate questions that would foster dialogue among the participants in the MOO. Their job was to identify critical issues, as reflected in the hosts' decisions, and to engage the hosts in dialogue around these decisions.

In preparation for our virtual open house, the hosts and guests were separated and the two groups worked independently on their respective tasks under the guidance of the authors. While the hosts were designing their rooms, the guests met and plotted their collective strategy. During an open-ended discussion, it was decided that the guests would represent the range of constituents who often are involved in schools, and that these roles should cover a wide range of philosophical and ideological positions. After choosing six different roles -- school administrator, elected official, angry majority parent, whole language enthusiast, skills-based teacher next door, and recent immigrant parent -- it was decided that the individuals would take on characters whose outlook was counter to those that the student teachers held. In addition, it was decided that the true identity of the guests would remain unknown to the hosts until after the MOO activity.

Technical aspects of the pilot project

The technical requirements for creating this activity ranged from setting up the freely available MOO and World Wide Web servers to entering all the textual and multimedia artifacts that each host or guest provided. In our case, the server programs found a home on a small UNIX workstation. To input all the graphic and textual information, we used a flatbed scanner attached to a microcomputer. The actual MOO sessions took place in a university microcomputer classroom in which all the computers had access to a World Wide Web browser and MacMoose, an easy-to-use MOO client program created and distributed by Amy Bruckman of the MIT Media Lab. During the sessions in the computer classroom, each participant worked on a computer running both a World Wide Web browser and MacMoose. The Web pages contained graphical information to supplement the textual descriptions of rooms, players, and objects in the MOO itself. Participants could move back and forth between the Web browser and MacMoose, as needed.

Training

Before the actual MOO session in the computer lab, participants learned a few basic commands and operations they would need to know in order to navigate in MacMoose and the Web browser. Once the guests and hosts had developed their personas and designed their rooms, all participants were given a tutorial on navigating and communicating within the MOO. Students were given articles that described the design and operation of other educational MOOs, and were shown samples of dialogue taken from other MOO sites to give them a flavor of MOO communication. Finally, students logged on to various MOOs around the world as guests, taking the opportunity to practice and explore within those environments.

Our first MOO experience

On the designated day during regularly scheduled class time the entire class assembled in the computer lab in the Graduate School of Education. It is worth noting that there was no technical requirement for all the participants to be in the same lab. Because the technologies involved are Internet based, each participant could been in a different building or country. We met in the computer lab primarily so that participants could obtain technical assistance more easily. Also, having all the participants in the same lab would make it easier for us to retrieve copies of the transcripts of the session, which MacMoose captures in a scrolling text field.

The following transcript provides a snippet of the types of interactions that occurred within our first MOO session. This transcript represents what one host, Yessa Goodwoman, saw on the main section of her monitor during the session. As the interactions unfolded, text like this would scroll past on her monitor. Responses that she would make were introduced into the discussion in the bottom half of the terminal and would appear as "You say...." This section of the transcript, approximately two hard-copy pages of text, represents 2 out of 13 overall pages of interaction during the session.

Traffic load

One of the first features you might notice about the nature of the transcript -- and one that caused some participants problems -- is what we have come to call traffic load. For example, the comment that Marlene makes in line 1 is responded to by Donna in line 11. The nature of this distance was dependent on the time it took for the responder (Donna in this case) to compose her thoughts and enter them into the dialogue. For example, in line 4, Surly responds quickly to Marlene's comment.

The difficulties of such response times can be seen in places where someone responds to a question, only to find that the person has left the room. For example, in line 35, Marlene announces her departure "Adios for now!" But, Yessa, who probably was composing at the time, does not notice and finally realizes she is in a one-way communication when she responds in line 42. This does not seem to throw off Yessa, though, because by line 50, she already is involved in commenting on Surly's non-verbal communication.

Traffic load increased as the number of people in the room increased. Lines 1-20, for example, reflect the nature of the traffice with four people in the conversation. When the group got too large, people would make comments or ask a question that would not be responded to for 20 lines or so, and then leave to find a more amenable room.

Wilding

This short section of transcript also provides several examples of what is known in the MOO circles as 'wilding.' Within environments such as Graceland, the normal rules that govern interaction are altered. With their inhibitions lowered, players often feel they can do and say almost anything that they wish at any time. During a training session, for example, one of the authors was criticized harshly in a MOO when he failed to respond promptly to a query from a participant.

In the case of the L&L MOO, wilding took two forms. First, this brief example provides several instances of the low road in interaction. For example, in line 8, Marlene impugns Surly's character by calling him a fascist, a sly poke at Ezra Pound whose picture was used for Surly's biography page. Surly's response, which can be found in line 22, returns the favor and criticizes Marlene for her ad hominem attack.

The second form of wilding (a very mild form compared to what one might find in other MOOs) can be found in other bad attempts at graduate student humor. As mentioned, one aspect of MacMoose is the ability not only to dialogue ("You say..."), but also to refer to oneself in the third person, as in line 7 where "Yessa claps for the theater's opening act."

These third person descriptions were employed to provide humorous comments on the dialogue. For example, in line 30 a small child falls asleep in class; in line 31 Marlene adjusts her makeup; Surly scratches an itch in line 48; and the crowd in line 34 and lines 54-55 make their own non-verbal comments on the interactions that are occurring.

The opportunity to engage in such highjinks made the experience quite fun. In the computer lab during the time of our session, all one could hear was the feverish sounds of clicking keyboards, which was interrupted only by cries for technical assistance or laughter from around the computer lab. After the session, all of the students involved commented on how quickly the time flew and on how surprisingly creative and funny their classmates were (something they do not always get a chance to see in conventional graduate school settings).

Critical thinking in the MOO

The critical component of this activity, from an instructional perspective, is the actual dialogue between guests and host that occurred during the session. The transcripts provide ample evidence that hosts could defend their decisions to critical observers. Viewed from another perspective, the transcripts provide a very telling type of assessment information. In essence, the transcripts provide a clear indication of the theoretical orientations of guests and hosts, and their ability to defend those positions.

An example of the types of questions asked by guests and the types of responses provided by hosts can be seen in the questions and comments of Dr. I. M. Surly and Donna's responses in the attached transcript. Surly's line of questioning and Donna's (and occasionally Yessa's) responses can be found in a series of exchanges that begin on line 38, with Surly's question about a normal day in the classroom. Donna's first response appears on line 44, where she introduces the notion of contextualized skill instruction and the development of reading strategies. Surly's next substantive contribution, on line 51, picks up on Donna's comment and asks for clarification of the role of direct instruction in skill development. This pattern of question - clarification - question continues, with diversions for comments, through the end of the transcript on line 116.

Surly's pattern of questioning is quite thorough in that he questions their assumptions about materials in lines 56-58, their choice of instructional strategies in lines 73-76 and later in lines 108-113, and their use of terminology in lines 84-85. In response to Surly's questions, Donna and Yessa extend and expand on their definition of reading strategies both in lines 62-66 and 81-83.

This portion of dialogue, the give and take of questions and answers, works in part because the participants remained within the role, i.e. within the character, that they represented. Surly's focus on tradition, hard work, direct instruction and his temperament are consistent throughout his interactions, and he regularly makes reference to his own personal history and educational experiences and training. The same is true for the hosts. In this case, Donna's argument for contextualized and student-centered instruction is consistent throughout the transcript and session. Further, Donna and Yessa's comments also reflect the normal openness and politeness that one finds at an open house night at any elementary school. Even in the face of direct attacks on their decisions, hosts stayed calm.

This is not to say that all of the transcripts from each of the participants is filled with substantive and theoretically sound argumentation. The transcripts and the arguments within them reflect the range of learners that participated in the activity. Not all of the guests were as confident and direct as Dr. Surly, and not all of the hosts were as clear and patient as Donna and Yessa. The transcripts provide a clear indication of how facile participants were with discussing the issues and with understanding their own beliefs and practices.

Debriefing the first MOO experience

Although all of the participants in the first L&L MOO session enjoyed the activity, several critical issues were raised during our debriefing sessions afterwards, both about the activity and the technology.

Reactions to the technology

In terms of the technology there were several issues that made the activity frustrating at times. First, we were not able, within the first and second sessions, to fully utilize all aspects of multimedia technology. We had technical difficulties with both the embedding of video and audio segments within the rooms. We also had problems with the nature of the timelines we set for allowing the scanning and development of the rooms. This lack of planning led to some all-night sessions and compromises in what could be accomplished.

Our inability to fully use the multimedia dimension of the WWW is reflected in the rooms that were developed for the first session. The rooms, such as Intervention Heaven, did not fully address what we termed a site of instruction. Although the assignment asked for hosts to provide these examples, both the design and technical aspects of the tasks were beyond students' capabilities. Students were not able, within the allotted time frame given to the activity, to readily employ textual transcriptions of student-teacher interaction or audio or video examples. What we ended up with were rooms that were flat: they relied on text and simple graphics.

Second, analysis of the transcripts and discussions with participants (particularly guests) showed that participants had difficulty navigating within Graceland. Guests who were moving from room to room often had difficulty finding their way out of one room and into another. Such difficulties would be marked in a transcript very clearly. A guest might say "go south" only to get a response of "can't go that way." Serious confusion would be marked by a list -- first south, then east, west, and north. One student's exasperation with navigating in cyberspace led her to type "Help me!!! I've fallen in cyberspace and can't get up!!!"

The strength of participants' keyboarding skills also was raised as an issue. The fast paced nature of the interactions in the MOO requires a firm command of keyboarding and typing skills. As it turned out, only one participant had difficulty with keyboarding, and for her it did cause a bit of frustration. As she commented, "The speed of it all was sometimes frustrating."

Reactions to the one participant's keyboarding problems varied. While most tried to work with her, clarifying and extending her comments, others mocked her and deliberately

misspelled and altered their comments. This provided another example of the wilding that occurred.

MOO participants also commented on the frustration often caused by the traffic load and the format of the communication. As one participant noted, "It was difficult to read everything and respond in a timely manner." This frustration was tied to both the timing of the gaps between questions and answers and also to the unpredictable order of comments. Given that the normal conventions of interaction were changed (such as turn taking or staying on topic) students often found it difficult to follow the flow of the discussion.

Reactions to role-playing

In terms of other components of the activity, students had much to say about the role-playing dimension of the MOO. Overall, students saw the role-playing dimension as a real strength of the activity. This component of the activity was so powerful, in fact, that several participants reported becoming "totally engaged." The student who developed Dr. Surly commented:

"I enjoyed the preparation, thinking about and creating a character. I enjoyed seeing and experiencing the creativity, wit, and knowledge of my colleagues. I enjoyed being totally lost in the moment, taking on a character so completely that I thought as him at some points. It wasn't me thinking 'what would Surly say?' I *was* Dr. Surly. I became fluent in Surly -- I was no longer translating."

A host stated it differently: "When I was in my room, I was a first grade teacher -- I interacted with students and guests just as I would have in my own classroom. I *was* in my own room!"

Role-playing also shaped several other dimensions of the activity. First, the fact that guests had assumed roles reflecting the entire spectrum of views insured that the activity would not be a "love in." Rather, the differences of opinion made for a real test of the hosts' (and sometimes guests') ability to defend his or her own positions.

The role-playing dimension also allowed a certain freedom within the discussion that might not otherwise have been the case. The fact that participants were in role, and their true identifies were hidden, provided an opportunity for participants to freely question and challenge others. This anonymity created a safe situation in which all questions could be addressed -- as one participant noted "I enjoyed having to defend my positions ... without getting personally involved." Another participant framed it in these terms: "I felt that the role-playing allowed us to open up and really say what we felt about an issue because we knew that we wouldn't be offending or upsetting anyone -- things weren't taken personally." In short, the anonymity allowed for the suspension of political correctness.

This is not to say that the participants did not see limitations to role-playing and the interactions within the MOO. Several participants commented that the role-playing, although it did set up some clear distinctions among characters, also led to a superficial discussion of topics at some points. As one participant noted:

"I felt constrained to respond in a manner that was consistent with my character. I couldn't

really be persuaded or change my opinion. This meant that we were interacting on a superficial level to some extent, as we only had caricatures to draw from in our responses. If we had not adopted personas I would have delved more deeply into the topics and been more flexible and open."

Other participants found it hard to adopt and maintain an alternative perspective. As one participant noted, "It was difficult to formulate a false identity based on a philosophy of education that was not my own." There was not a consensus in this regard; some struggled while others took to role-playing "like Yessa did to whole language teaching."

Reactions to the activity

In terms of the original objectives of the activity, it appeared that participants did see the value in having to present and defend their positions to others with opposing views. Participants "enjoyed having to answer questions and defend a position." As others noted, "I was able to sharpen my thinking on literacy related issues.... I learned the importance of being able to back up your philosophies and theories."

The nature of the open house also lent itself to reflections on communication in schools. As one participant noted, "I can't say that I learned a lot about reading, but I did learn how I might deal with lay people and that you have to meet people on their terms." Another participant captured the issue succinctly: "It was a non-threatening way to remind me that being able to articulate my philosophy and teaching methods is important and needs more practice." Comments such as these suggest that the MOO does indeed provide a means to develop and reinforce such skills.

Another indication of the success of the activity was found in the comments and reflections of the hosts. The process of thinking through and developing a room was a valuable activity. "I can't say that I learned anything during the chat," one participant commented, "but I learned more about my own ideas through setting up the room."

Once in the MOO, hosts reported other realizations. As one host noted, "I was frustrated at times during the session when I realized that I was not fully prepared to defend my development of a 'natural environment.' This happened with other questions as well."

The most active discussion held after the first MOO centered on the questions, "Couldn't we have done the same thing in a face to face discussion in class? Just as we have been doing, and as most classes do? What did we really gain?" Overall the participants did find the experience valuable, but they did have concerns about the seriousness of the discussions and the possibility that wilding and other play would lead to shallow and superficial treatment of the issues. As one participant noted, "I think it would be a waste of time, however, if people were not asking serious questions."

Based on the comments and reflections collected after our first MOO, there was a unanimous decision to continue with the activity. A second MOO session, with the same group, was held late in the spring semester of 1996 under the theme "Meeting Individual Needs". Examples of the rooms and character descriptions developed for the second MOO are attached.

Language and Literacy MOO year two: Adaptations

Using the feedback that participants provided and an examination of the protocols of the MOO sessions in year one, we adapted the activity in several ways in the Fall of 1996. In particular, we altered our training protocol. Also, we formalized the project by seeking support of the Instructional Technology Program (ITP) here at Berkeley.

Our request for formal support from ITP coincided with a larger effort by the program to introduce the use of MOOs into humanities courses on campus. During the same time that we were experimenting with the L&L MOO, foreign language and lower division writing courses were also doing the same. The campus had been using Daedalus InterChange for some time, but these activities now were moving onto the Internet-based MOO environments set up and supported by ITP.

In effect, we were able to benefit from the experience of the support staff who were deploying the Cafe MOOlano MOO, which began serving dozens of language and writing courses at Berkeley daily. The same support personnel, including programmers and designers, assisted with the second year of the L&L MOO. This support allowed us to redesign the training that we provided for participants of the MOO and gave us the lead time necessary for the development of the rooms (getting materials scanned and prepared). We were particularly eager to work out the difficulties associated with embedding audio and video within the rooms.

Changes in training

Rather than start with the operational aspects of the MOO, such as dialoging and navigation, in the second year we approached MOOs thorough a general introduction and overview of the WWW. This was done for several reasons. First, in getting to know our new students, we discovered that only 1 of 12 had any experience with the WWW. Second, we felt that to understand MOOs and their relation to other software and application, students needed to see the big picture.

To achieve these goals we scheduled three 2-hour training sessions in the lab. The first session was a general introduction to the WWW, with plenty of time for students to browse and examine topics of their choice. The second session linked MOOs to the WWW, with a focus on the organization of information within a Web site (use of hypertext links, graphics, and video). The third session focused on the specifics of MOO participation. Students were given a brief tutorial on dialog and navigation and then were given a chance to test the chat component of the L&L MOO. We did this trial run in Graceland, after a tour of the rooms and characters designed in year one.

Changes in design

The room titled "Reading Boost" provides a good example of the evolution that occurred in the hosts' rooms from year one to year two. This room provides an example of a more complete application of the possibilities presented in linking MOOs and the WWW. First this room utilizes the possibilities presented by hypertext and embedded information. Bonnie, the host, has provided a hierarchical structure to the information with seven areas or categories in the room (population served, goal, description, standards, assessment

tools, physical layout, and instructional information).

Information about each of these areas is embedded within the category. Within Assessment Tools, for example, Bonnie lists the tools that area employed (such as Concepts of Print) and then embeds a description of the measure, along with examples and student work within these headings. Within the area of program description, Bonnie embedded information about the charts on the wall, a map of the room, and a video clip of actual instruction.

The Reading Boost room is still under construction. The information currently in the room reflects what could be accomplished within the timelines set out for the activity. Given more time and planning, this room (and program) description would be more fully developed.

As was done in the first year, guests assumed anonymous roles reflecting a range of beliefs and experiences. Unlike the first year, students insisted that the perspectives of a child be represented in the discussion. Also unlike the first year, several guests assumed roles that would allow them to express their own perspectives, while still being within a role.

A look at the transcripts

The following transcript provides a snippet of the types of interactions that occurred within our first MOO session in year two of the project. This transcript represents just the comments of Amy (a host) during the session. Unlike the first transcript discussed above, this example reflects not all of the discussion that was taking place in Amy's fifth grade classroom, but only the contributions that she made during the session. This sample, which is approximately three single spaced typed pages in hard copy, represents 3 of 6 total pages generated during the session.

The ability to capture the transcripts, of both the overall dialogue in a room (as in the first transcript) and the specific contributions of an individual host or guest, is a nice feature of the program MacMoose. Examining the contributions of a specific participant allows a close focus on the type and nature of their contributions.

As you can see in the transcript, the same type of contributions and issues present in the first session also are present here. First, Amy adopts the teacher role within the open house: she is open to all visitors, and deals professionally with the various characters who wander in and out of the room. A nice wrinkle on this teacher role can be found in the examples where Amy excuses herself while she goes off to check on or administer classroom activities. In line 41, for example, she goes to check her language arts centers; in line 60 it is the art center; she's off to a portfolio conference in line 106; she reads to child prodigy in line 110; and goes to the science center in line 124.

This section of transcript also reflects Amy's responses to the questions raised by her guests. Her responses, as was the case in the first transcript, provide evidence that she was critically engaged in presenting her perspective on literacy instruction. Amy actively defends the organization and management of her room (the noise) in line 23, describes her views of the writing process in lines 42-46 and in lines 49-52, provides her view of the importance of parental involvement and support in lines 69-72, and her perspective on the

value of art in lines 82-90.

What's interesting to note about Amy's interactional pattern is her use of questions to turn back the issue to the guests. Such interactions were a variation on the question - answer - question pattern discussed with the first transcript. For example, in her exchange with Kevin starting on line 111, Amy responds to a question about basic skills with a comment and then a question -- "What do you mean by basic skills?" The same pattern can be found in the continuation of the discussion on lines 119-123. The pattern changes somewhat, in that the next exchange on line 128-129, still represents an attempt to turn the topic back onto Kevin, but in this case using a comment rather than a question.

It also is interesting to note the absence of examples of wilding in this transcript. This is not to say that such highjinks did not occur, but rather it suggests that as a host Amy had neither the time or inclination for such actions.

As was the case in the first year, the range of questions and answers reflect the range of learners who took part in the activity. Again, not all characters were confident and critical, and not all hosts were successful in clearly elucidating their perspectives. The transcripts, in fact, provide a very clear picture of where these students are in their internalization of the issues presented in the program.

Although we are still in the process of collecting feedback on this last MOO session, our analysis of the transcripts and discussions with students suggest that again we were able to achieve the overall objectives of the activity, and to introduce students to a use of Internet technology in classrooms.

Discussion, conclusions, and next steps

We began this project with a "let's try it" attitude and the hope that the development of the L&L MOO and engagement in the open house activities at Graceland could serve to strengthen what students were learning in the program and at the same time introduce them to the WWW and Internet applications for K-12 classrooms. At this point in our development of the activity and reflection on the sessions that have been held we feel that we are moving in the right direction for the achievement of both of these objectives.

In reflecting on the relation of this activity to the broader program it appears that an activity like the L&L MOO can serve to act as a tool for the coordination and application of assignments and activities completed within the program. The development of an ideal classroom and the marshaling of evidence to support it, using actual examples of instruction, appears to be a worthwhile endeavor. Further, having students interact in real-time dialogue about their decisions provides another opportunity for students to defend their decisions. The nature of their defense provides a clear and insightful assessment of how they view the issues and how facile they are presenting their views to others.

In terms of the second objective, introducing students to the Internet and WWW, we feel the L&L MOO may provide a great vehicle for the development of an awareness of how the WWW is organized and structured, as well as an introduction into the types of interaction that are possible within existing Internet technology. In fact, in debriefing the

first session in year two, many students commented that the most valuable aspect of the activity for them was having the introduction to the Internet and gaining a better sense of what people were talking about when they talk about surfing and browsing the Internet. Students immediately identified the research applications of the the medium and generated a list of questions as to how they might employ this technology for their own studies.

Although the activity seemed to provide a variety of benefits to students, our experiences with the L&L MOO also provided the opportunity to examine the ways and means by which we have addressed technology applications in the past and raised questions about how we might go about integrating technology into the program in the future.

Our experiences reinforced for us our conviction that many software applications in the language arts, such as drill and skill programs, are not consistent with our theoretical orientation to language and literacy instruction and therefore do not lend themselves to an easy integration within the program. In fact, this activity convinced us that the main focus of our instruction in technology should be in terms of the Internet and applications such as MOOs and WOOs. This is not to say that we will not introduce students to other software applications, but rather that applications such as drill and practice programs will play a minor role in our instruction. But if, for instance, we as educators perceive and value the role of peer talk in our classrooms (Dyson, 1994), we should focus on software environments like MOOs that make room for peer talk as well. If we seek to negotiate a more permeable curriculum that makes room for the diversity of cultural experience and materials that students bring into the classroom (Dyson, 1993), we should appreciate software environments like MOOs that allow for the inclusion, manipulation, and presentation of these materials.

In essence, this activity provided an opportunity for us to examine the overall ARLLP program. How do the assignments, activities, papers, and field work fit together? Are they theoretically consistent? Are they all reinforcing a basic set of competencies? And, perhaps most importantly, how can we utilize technology to assist in this integration?

Perhaps this is a good time for a confession. Prior to the development of this activity, the role of technology in the ARLLP was ill defined and was tangential to the core activities of the program -- it was an add on, something that had to be done to satisfy the Commission on Teacher Credentialing and the State Department of Education. The creativity, wit, level of engagement, and products that students generated during the year and a half of this project has shown us that benign neglect was not an appropriate approach to the integration of technology into the program. Rather, it is up to us to clarify the role of technology in the program and find applications of that technology that can become part of the day-to-day administration of the both the course work and field work.

The L&L MOO is still alive and our experimentation with possible applications of WOOs will continue. First, we still have much to do on the technical side to help students avoid the pitfalls of navigation within Graceland. Our hope is to work with the programmers at ITP to find a way to assist with navigation for participants. The attached mock-up of our next generation Web-MOO site that is currently under development, brings together a host's rooms (on the right hand side) and its attendant information, with an overview of what's occurring in the MOO (the left side). This left hand margin would provide a visual overview of the rooms in the MOO, allow quick movement between rooms, provide a

status of who is in the room, as well as an update of other characters who are elsewhere in the MOO.

This addition of a Web-based graphical interface to the MOO raises some interesting issues. Text-only environments and graphical environments each have strengths and weaknesses. As Web-MOO combinations become more common and easier to implement, developers will try many different mixtures of the two. Text descriptions are still far more flexible (and economical in terms of bandwidth and access) than graphic representations. It is far easier to say "You enter a large room with pink walls and a purple carpet. Sunlight is streaming in through a large open window" than it is to draw or photograph such a room. We therefore feel that in most cases attempts to substitute graphic representations for text representations will detract, rather than add, to a MOO's usefulness and appeal. On the other hand, in a text-only MOO, users waste a lot of time just trying to determine what is going on -- where they are, who they are talking to, who is there with them, where everyone else is, and how to get where they want to go. These are all problems that could be solved through maps and other graphical aids such as those we are exploring in our mock up. We would hope that freed from having to worry about such navigational issues, users would could then concentrate more fully on getting the most out of text-based interaction and description.

In addition to the development of a graphical navigation devices, we have much to do to help streamline the issues associated with room development and a fuller utilization of audio and video. Again, we would tend to use these media where they are superior to text -- that is, when they get more information across more clearly (or more objectively) in less time. Would it be better, for example, to read a text description such as "you enter a noisy classroom" or to click a button on screen that would play a recording of the actual noise? It would obviously depend on many factors, not the least of which would be the time it takes to make the recordings and get them up on the Web page. We clearly need more MOO sessions in order to work out the difficulties associated with fully utilizing this technology. How such technology should be presented and integrated into our program's coursework is still an open question. The fact that the technology is rapidly changing only reinforces our interest in strengthening the viability and usefulness of the assignment each time it is repeated. The experience that we have had with the MOO sessions to date has pushed us back into the research literature with new questions and perspectives. Our understanding of the applications of the technology, like the activity itself, will surely change over time. And, in essence, that is what makes it so much fun.

Note: Please visit the online discussion forum and share your comments about this article.

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